Planning Workbench Drill-Down

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Overview

Release A CDR RID #15 Design Issue

- **Held Delta Detailed Design Review on 9/27/95**
- **AutoXpert COTS solution did not meet requirements**
- **Completed Planning Workbench CSC documentation**
- **Much more than presented here (Ref. 305-CD-026-001)**
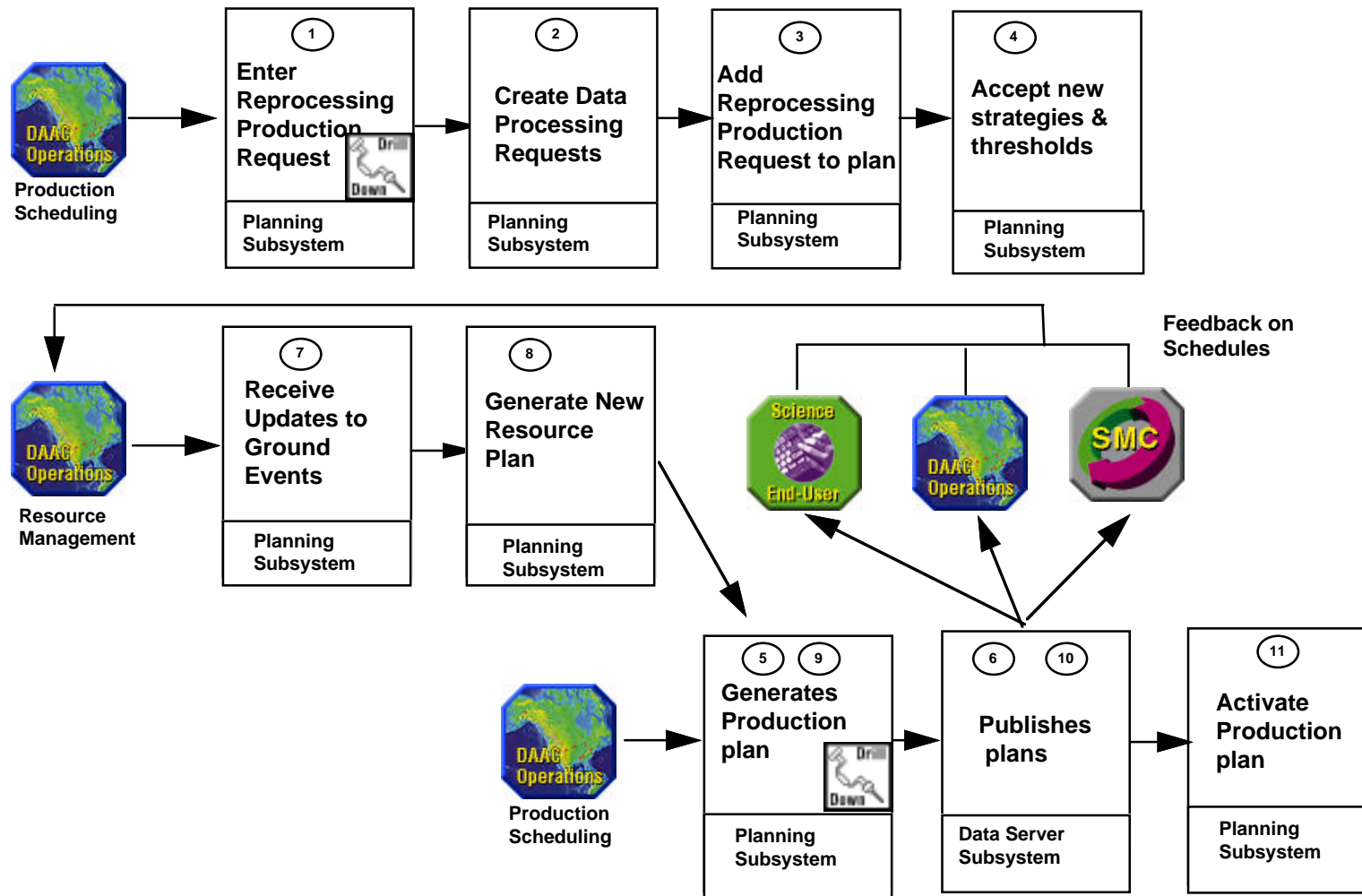
New Release B Planning Workbench capabilities

ECS Context

- **Planning Subsystem**

Scenario Context

- **Resource Planning for Reprocessing Scenario**

Resource Planning for Reprocessing
Functional Flow

Production Scheduling

1
Enter Reprocessing Production Request

Planning Subsystem

2
Create Data Processing Requests

Planning Subsystem

3
Add Reprocessing Production Request to plan

Planning Subsystem

4
Accept new strategies & thresholds

Planning Subsystem

Resource Management

7
Receive Updates to Ground Events

Planning Subsystem

8
Generate New Resource Plan

Planning Subsystem

Science End-User

DAAC Operations

SMC

Feedback on Schedules

Production Scheduling

5 9
Generates Production plan

Planning Subsystem

6 10
Publishes plans

Data Server Subsystem

11
Activate Production plan

Planning Subsystem

Design Drivers

Delta Detailed Design Review Decision Drivers

- **Need to account for resource loading**
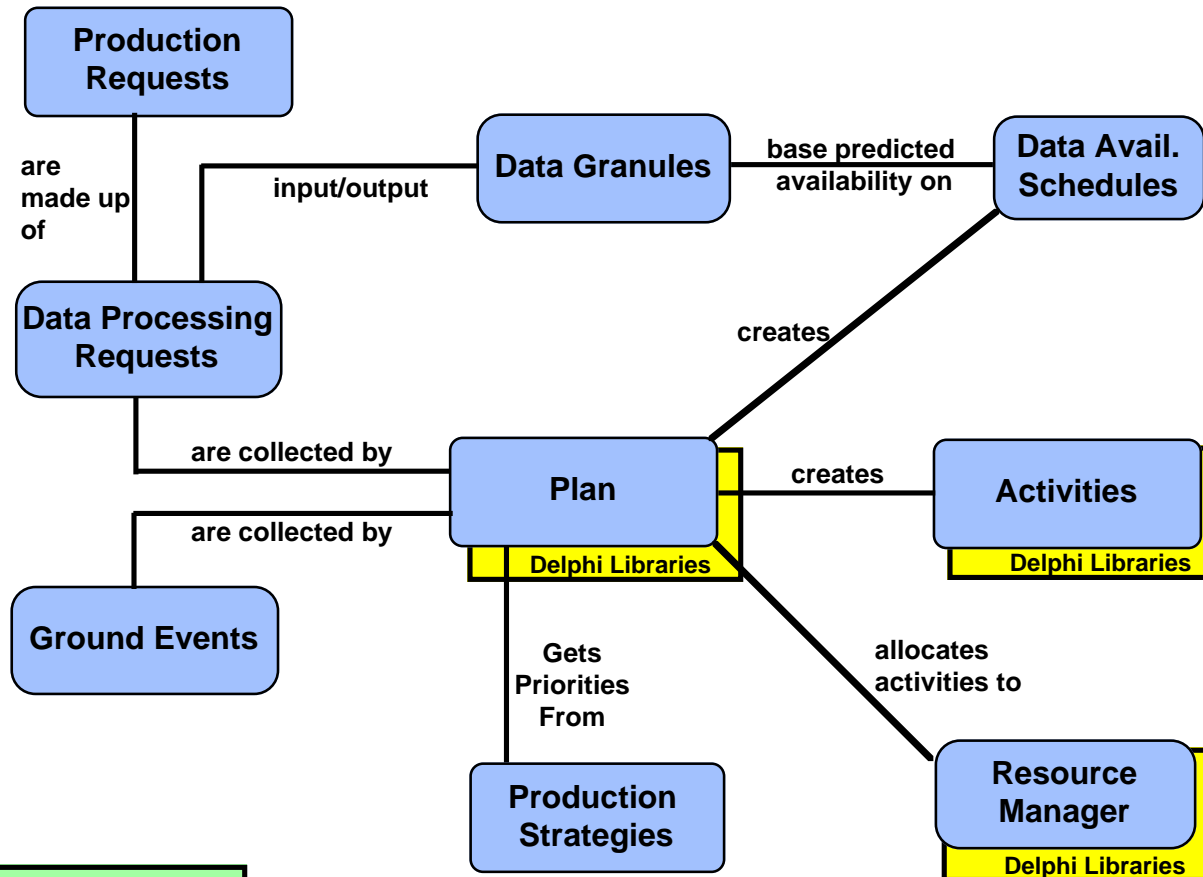- **Require look-ahead feature in producing plan**

Driving Requirements

- **Handle cross-DAAC data dependencies**
- **Higher production volume / increased algorithm complexity**
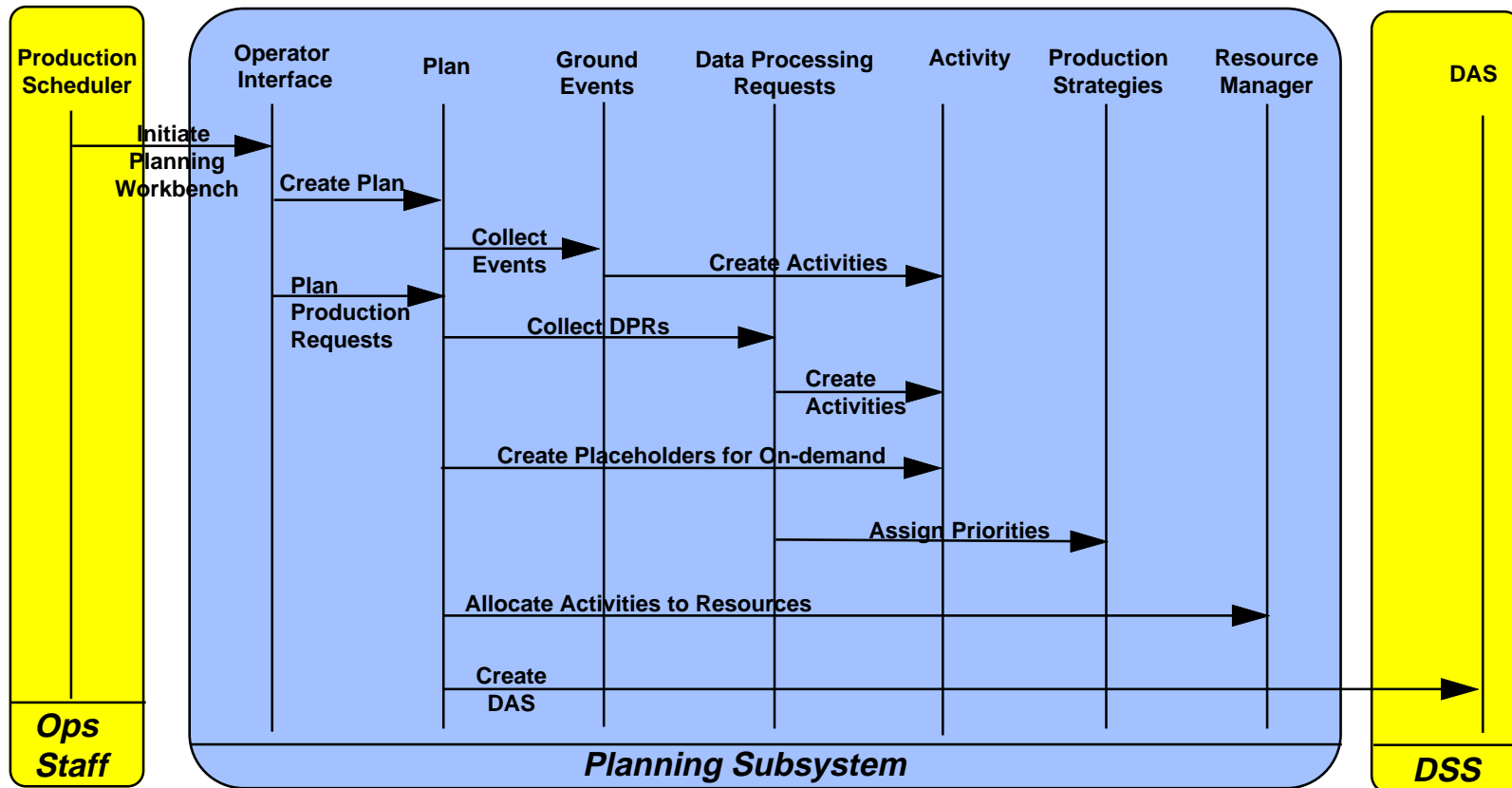
New Release B features

- **Support cross-DAAC planning and schedule adjudication**
- **Flexible planning strategies**
- **Limited automatic replan**

Software Design –
High Level Class Model

Production
Requests

are
made up
of

input/output

Data Granules

base predicted
availability on

Data Avail.
Schedules

Data Processing
Requests

creates

are collected by

Plan

creates

Activities

are collected by

Delphi Libraries

Delphi Libraries

Ground Events

Gets
Priorities
From

allocates
activities to

Resource
Manager

Production
Strategies

Delphi Libraries

For details, reference:
DID 305-CD-026-001

Software Design – Plan Creation

Production Scheduler → Operator Interface: **Initiate Planning Workbench**

Operator Interface → Plan: **Create Plan**

Plan → Ground Events: **Collect Events**

Ground Events → Data Processing Requests: **Create Activities**

Operator Interface → Plan: **Plan Production Requests**

Plan → Data Processing Requests: **Collect DPRs**

Data Processing Requests → Activity: **Create Activities**

Plan → Activity: **Create Placeholders for On-demand**

Activity → Production Strategies: **Assign Priorities**

Plan → Resource Manager: **Allocate Activities to Resources**

Plan → DAS: **Create DAS**

Planning Subsystem

Ops Staff | **DAS** | **DSS**

For details, reference: DID 305-CD-026-001

Evolutionary Features

Potential Future Enhancements

- Additional Automatic Replan capabilities
- Incorporate new planning strategies

Emerging Technology

- Follow developments in Planning/Scheduling COTS (AutoSys/AutoXpert)

Scalability

- Extensible planning algorithms and resource model
- Handles full Rel. B load; scales to future loads

Current Status / Summary

Prototypes/Studies

- Planning algorithm prototype (Rel. A)
- Inter-DAAC planning prototype
- Planning rules prototype

Critical Decisions

- Ops Concept for Remote Access Science Software Integration & Test

Next Steps

- Specify syntax of new Production Rules to Data Providers
- Ops Scenario for limited automatic replan

Summary

- Delphi provides a flexible framework for development
- High degree of automation, but control still possible